In the claims:

1. (Currently Amended) A system for radioactive emission imaging after an administration of a radiopharmaceutical, by calculating a position of a radioactivity emitting source in ~~a~~ an overall system-of-coordinates, the system comprising:

(a) a first radioactive emission detector;

(b) a first position tracking system, associated with ~~being connected to and/or communicating with~~ said first radioactive emission detector, and operative in a first system-of-coordinates; ~~and~~

(c) at least a second radioactive emission detector, physically connected to said first radioactive emission detector, by a flexible connector;

(d) at least a second position tracking system, associated with said at least second radioactive emission detector, and operative in at least a second system-of-coordinates;

(e~~e~~) a data processor being designed and configured for receiving data inputs from said position tracking ~~system~~ systems and from said radioactive emission ~~detector~~ detectors and for calculating the position of the radioactivity emitting source in the overall system-of-coordinates,

wherein said first and at least second radioactive emission detectors are configured for scanning a three dimensional surface, while following contours of said three dimensional surface.

2. (Original) The system of claim 1, wherein the radioactivity emitting source is selected from the group consisting of a radiopharmaceutically labeled benign tumor, a radiopharmaceutically labeled malignant tumor, a radiopharmaceutically labeled vascular clot, radiopharmaceutically labeled inflammation related components, a radiopharmaceutically labeled abscess and a radiopharmaceutically labeled vascular abnormality.

3. (Currently Amended) The system of claim 1, wherein each of said radioactive emission ~~detector~~ detectors is selected from the group consisting of a narrow beam radioactive emission detector and a spatially sensitive radioactivity detector.

4. (Currently Amended) The system of claim 1, wherein each of said position tracking ~~system~~ systems is selected from the group consisting of an articulated arm position tracking system, an accelerometers based position tracking system, a potentiometers based position tracking system, a sound wave based position tracking system, a radiofrequency based position tracking system, an electromagnetic field based position tracking system and an optical based position tracking system.

5. (Currently Amended) A method for radioactive emission imaging after an administration of a radiopharmaceutical, by defining a position of a radioactivity emitting source in ~~a~~ an overall system-of-coordinates, the method comprising the steps of:

(a) providing: ~~a radioactive emission detector being connected to or communicating with a position tracking system; and~~

(i) a first radioactive emission detector;

(ii) a first position tracking system, associated with said first radioactive emission detector, and operative in a first system-of-coordinates;

(iii) at least a second radioactive emission detector, physically connected to said first radioactive emission detector, by a flexible connector;

(iv) at least a second position tracking system, associated with said at least second radioactive emission detector, and operative in at least a second system-of-coordinates;

(v) a data processor, designed and configured for receiving data inputs from said position tracking systems and from said radioactive emission detectors and for calculating the position of the radioactivity emitting source in the overall system-of-coordinates;

(b) employing said radioactive emission detectors in scanning a three dimensional surface, while following contours of said three dimensional surface; and

(~~b~~c) monitoring radioactivity being emitted from the radioactivity emitting source, while at the same time, monitoring the position of each of said radioactive emission ~~detector~~ detectors in the overall system-of-coordinates, thereby defining the position of the radioactivity emitting source in the overall system-of-coordinates.

6. (Original) The method for claim 5, wherein the radioactivity emitting source is selected from the group consisting of a radiopharmaceutically labeled benign tumor, a radiopharmaceutically labeled malignant tumor, a radiopharmaccutically labeled vascular clot, radiopharmaceutically labeled inflammation related components, a radiopharmaceutically labeled abscess and a radiopharmaceutically labeled vascular abnormality.

7. (Currently Amended) The method for claim 5, wherein each of said radioactive emission ~~deteetor~~ detectors is selected from the group consisting of a narrow beam radioactive emission detector and a spatially sensitive radioactivity detector.

8. (Currently Amended) The method for claim 5, wherein each of said position tracking ~~system~~ systems is selected from the group consisting of an articulated arm position tracking system, an accelerometers based position tracking system, a potentiometers based position tracking system, a sound wavc based position tracking system, a radiofrequency based position tracking system, an electromagnetic field based position tracking system and an optical based position tracking system.

9-16. (Canceled)

17. (Currently Amended) ~~A~~ The system of claim 1, ~~for calculating a position of a body component and a position of a radiopharmaceutical uptaking portion of the body component within a subject, the system~~ and further comprising: ~~(a)~~ a at least one other three-dimensional imaging modality, different from radioactive emission imaging, the at least one other three-dimensional imaging modality being associated with an at-least-one-other-imaging-modality position tracking system, operative in an at-least-one-other-imaging-modality system-of-coordinates, ~~being connected to and/or communicating with a first position tracking system~~ for calculating the position of ~~the~~ a body component in ~~a first~~the at-least-one-other-imaging-modality system-of-coordinates,; ~~(b) a radioactive emission detector being connected to and/or communicating with a second position tracking system for tracking a position of the radiopharmaceutical uptaking portion of the body component in a second system of coordinates; and (c) at least one~~

wherein the data processor ~~being~~ is further designed and configured for receiving data inputs from said three-dimensional imaging modality, and said at-least-one-other-imaging-modality position tracking system, ~~said first position tracking system, said radioactive emission detector and said second position tracking system~~ and calculating the position of the body component and the position of the ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting source in ~~a common~~the overall system-of-coordinates.

18-22. (Canceled)

23. (Currently Amended) The system of claim 17, wherein said at least one other imaging modality communicates with an image presentation device which serves for visual co-presentation of said body component and said ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting source.

24-25. (Canceled)

26. (Original) The system of claim 17, wherein said imaging modality is selected from the group consisting of a Fluoroscope, a Computed Tomographer, an Magnetic Resonance Imager, an ultrasound imager and an optical camera.

27. (Currently Amended) The system of claim ~~17~~1, wherein said radiopharmaceutical is selected from the group consisting of .sup.137I, .sup.67Ga, .sup.99MTc methoxyisobutyl isonitrile, .sup.201TlCl, .sup.18F-fluorodeoxyglucose, .sup.125I-fibrinogen and .sup.111In-octreotide.

28. (Currently Amended) The ~~A~~ method of claim 5, ~~for calculating a position of a body component and a position of a radiopharmaceutical uptaking portion of the body component within a subject, the method comprising the steps of: (a)~~and further comprising:

providing ~~a~~ at least one other three-dimensional imaging modality, different from radioactive emission imaging, the at least one other three-dimensional imaging modality being associated with an at-least-one-other-imaging-modality position tracking system, operative in an at-least-one-other-imaging-modality system-of-

coordinates, for calculating the position of the body component in ~~a first~~ the at-least-one-other-imaging-modality system-of-coordinates;

~~(b) providing a radioactive emission detector being connected to and/or communicating with a second position tracking system and tracking a position of the radiopharmaceutical uptaking portion of the body component in a second system of coordinates; and (c)~~

receiving data inputs from said at least one other three-dimensional imaging modality, and said ~~first~~ at-least-one-other-imaging-modality position tracking system~~, said radioactive emission detector and said second position tracking system~~; and

calculating the position of the body component and the position of the radioactivity emitting source ~~radiopharmaceutical uptaking portion of the body component~~ in ~~a common~~the overall system-of-coordinates.

29-33. (Canceled)

34. (Currently Amended) The method for claim 28, wherein said at least one other imaging modality communicates with an image presentation device which serves for visual co-presentation of said body component and said ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting source.

35-36. (Canceled)

37. (Original) The method for claim 28, wherein said imaging modality is sclected from the group consisting of a fluoroscope, a computerized tomography scanner, a magnetic resonance imager and an ultrasound imager and an optical camera.

38. (Currently Amended) The method for claim ~~28~~5, wherein said radiopharmaceutical is selected from the group consisting of .sup.137I, .sup.67Ga, .sup.99MTc methoxyisobutyl isonitrile, .sup.201TlCl, .sup.18F-fluorodeoxyglucose, .sup.125I-fibrinogen and .sup.111In-octreotide.

39. (Currently Amended) ~~A~~ The system ~~for performing an intrabody surgical procedure on a radiopharmaceutical uptaking portion of a body component within a subject, the system~~ of claim 1, and further comprising: ~~(a) a radioactive emission detector being connected to and/or communicating with a first position tracking system for tracking a position of the radiopharmaceutical uptaking portion of the body component in a first system of coordinates; (b)~~

a surgical instrument ~~being connected to and/or communicating~~ associated with a ~~second~~ surgical-instrument position tracking system, operative in a surgical-instrument system-of-coordinates, for tracking a position of said surgical instrument in a ~~second~~ surgical-instrument system-of-coordinates; ~~and (c) at least one~~

wherein said data processor ~~being~~ is further designed and configured for receiving data inputs from said ~~first position tracking system, said radioactive emission detector and said second position tracking system~~ surgical-instrument position tracking system and for calculating the position of the surgical instrument and the ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting source in ~~a common~~the overall system-of-coordinates.

40. (Currently Amended) The system of claim 39, wherein said surgical instrument includes an additional radioactive emission detector, whereas said at least one data processor ~~being~~ is further designed and configured for receiving data inputs from said additional radioactive emission detector for refining the position of the ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting source in the ~~common~~ overall system-of-coordinates.

41-45. (Canceled)

46. (Currently Amended) The system of claim 39, further comprising an image presentation device which serves for visual co-presentation of the position of said surgical instrument and the ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting source.

47-48. (Canceled)

49. (Original) The system of claim 39, wherein said surgical instrument is selected from the group consisting of laser probe, cardiac catheter, angioplastic catheter, endoscopic probe, biopsy needle, ultrasonic probe, fiber optic scopes, aspiration tubes, laparoscopy probe, thermal probe and suction/irrigation probe. Please add a pointing device for the open surgery application.

50-61. (Canceled)

62. (Currently Amended) ~~A~~ The method of claim 5, and further comprising: ~~for performing an intrabody surgical procedure on a radiopharmaceutical uptaking portion of a body component within a subject, the method comprising the steps of: (a) providing a radioactive emission detector being connected to and/or communicating with a first position tracking system and tracking a position of the radiopharmaceutical uptaking portion of the body component in a first system of coordinates; (b)~~

providing a surgical instrument, ~~being connected to and/or communicating~~ associated with a ~~second~~ surgical-instrument position tracking system, operative in a surgical instrument syste-of-cooridinates; ~~and~~

tracking a position of said surgical instrument in ~~a second~~the surgical instrument system-of-coordinates, while performing the intrabody surgical procedure; ~~and~~

~~(c)~~ receiving data inputs from ~~said first position tracking system, said radioactive emission detector and said second position tracking system~~ the surgical-instrument position tracking system; and

calculating the position of the surgical instrument and the ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting source in ~~a commonan~~ overall system-of-coordinates, while performing the intrabody surgical procedure.

63. (Currently Amended) The ~~system~~ method of claim 62, wherein said surgical instrument includes an additional radioactive emission detector, whereas said ~~at least one~~ data processor ~~being~~ is further designed and configured for receiving data inputs from said additional radioactive emission detector for refining the position of the ~~radiopharmaceutical uptaking portion of the body component~~ radioactivity emitting

source in the ~~common~~ overall system-of-coordinates.

64-71. (Canceled)

72. (Original) The method for claim 62, wherein said surgical instrument is selected from the group consisting of laser probe, cardiac catheter, angioplastic catheter, endoscopic probe, biopsy needle, ultrasonic probe, fiber optic scopes, aspiration tubes, laparoscopy probe, thermal probe and suction/irrigation probe.

73-76. (Canceled)

77. (Original) The method for claim 74, further comprising the step of co-presenting the position of said surgical instrument and the ~~radiopharmaceutical uptaking portion of the body component and said body component~~ radioactivity emitting source via a visual presentation device.

78-121. (Canceled)

122. (Currently Amended) The system of claim ~~112~~1, wherein said radiopharmaceutical is selected from the group consisting of 2-[.sup.18F]fluoro-2-deoxy-D-glucose, .sup.111In-Pentetreotide, L-3-[.sup.123I]-Iodo-alpha-methyl-tyrosine, O-(2-[.sup.18 F]fluoroethyl)-L-tyrosine, .sup.111In-Capromab Pendetide and .sup.111In-Satumomab Pendetide.

123-132. (Canceled)

133. (Currently Amended) The method for claim ~~113~~5, wherein said radiopharmaceutical is selected from the group consisting of 2-[.sup.18F]fluoro-2-deoxy-D-glucos- e, .sup.111In-Pentetreotide, L-3-[.sup.123I]-Iodo-alpha-methyl-tyrosine, O-(2-[18 F]fluoroethyl)-L-tyrosine, .sup.111In-Capromab Pendetide and .sup.111In-Satumomab Pendetide.

134. (New) The system of claim 1, wherein said flexible connector is selected from the group consisting of a cable, a hinge, an articulated system of arms and joints, and a combination thereof.

135. (New) The system of claim 1, wherein said three dimensional surfacc is defined by body curvatures of a living body that is scanned.

136. (New) The system of claim 1, wherein said three dimensional surface is defined by extracorporeal body curvatures of a living body that is scanned.

137. (New) The system of claim 1, wherein said three dimensional surface is defined by a body lumen of a living body that is scanned.

138. (New) The system of claim 1, wherein said three dimensional surface is defined by body curvatures of a living body that is scanned, during surgery.

139. (New) The system of claim 1, configured for providing real time information concerning the functionality of a tissue.

140. (New) The method of claim 5, wherein said flexible connector is selected from the group consisting of a cable, a hinge, an articulated system of arms and joints, and a combination thereof.

141. (New) The method of claim 5, wherein said three dimensional surface is defined by body curvatures of a living body that is scanned.

142. (New) The method of claim 5, wherein said three dimensional surface is defined by extracorporeal body curvatures of a living body that is scanned.

143. (New) The method of claim 5, wherein said three dimensional surface is defined by a body lumen of a living body that is scanned.

144. (New) The method of claim 5, wherein said three dimensional surface is defined by body curvatures of a living body that is scanned, during surgery.

145. (New) The method of claim 5, configured for providing real time information concerning the functionality of a tissue.

146. (New) The system of claim 1, wherein said flexible connector is selected from the group consisting of a cable, a hinge, a system of arms and hinges, and a combination thereof.

147. (New) The method of claim 5, wherein said flexible connector is selected from the group consisting of a cable, a hinge, a system of arms and hinges, and a combination thereof.